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One event, three investigations: The reproduction of a safety norm

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ABSTRACT

Following an adverse event in a Swedish university hospital in 2010, three separate investigations seeking causal factors were conducted. We here review each of the analyses to see whether they together generate the kind of epistemological pluralism that could contribute to a systemic understanding of, and learning from, the event. Our content analysis shows that, while using vastly different amounts of time and resources, all three investigations make the same analytical choice to construct the causal factors as a deviation from norm in the event's immediate temporal and spatial proximity. We recognise that this both represents a strong discourse in the community analysing adverse events and seems to fulfil certain psychological purposes. Furthermore, we suggest that thorough analysis of adverse events in healthcare need to include aspects of system interaction from the micro to the macro, cognitive work configuration and design, as well as variability as a resource to harness rather than a threat to limit and control.

1. Introduction

The discourses of healthcare quality and safety were merged through the convincing argument that healthcare errors should be an important focus for quality improvement. This argument, made by the Committee on Quality of Health Care in America in the report *To Err is Human* (Kohn et al., 2000), has since then guided efforts on patient safety (and quality) improvements in healthcare systems worldwide. Sweden is not an exception. For Swedish healthcare provider organisations, it is under certain circumstances mandatory by law (The Swedish Patient Safety Act, 2010) to report adverse events to the regulatory authority - formerly the National Board of Health and Welfare (SoS) and from June 2013 the Swedish Health and Social Care Inspectorate (IVO) - and also to conduct incident investigations themselves. For such investigations, methodological support has since 2005 been available from the Swedish Association of Local Authorities and Regions (Swedish Association of Local Authorities and Regions, 2009). Regardless of body responsible for analysis, identification of causes and prevention of recurrence are the major goals.

We have in two previous studies explored how Swedish healthcare provider organisations, in their internal investigations after adverse events, construct targets of intervention and system improvement (Wrigstad et al., 2014), as well as how the Swedish regulatory authority's constructions of adverse events causation and targets of action has changed over the last 20-year period (Wrigstad et al., 2015). Together these studies draw a picture of how healthcare provider organisations, as well as the regulatory authority, construct causal factors to adverse events at the micro organisational level: close in both time and space to the adverse event itself.

Our epistemological starting point of analysis is that 'causes' of adverse events are not *found*; as if they were out there readily waiting to be discovered or uncovered. Our perspective is that 'causes' are *chosen* and *selected*; typically, by those given the mandate to choose and construct authoritative causal accounts (Rasmussen et al., 1990; Lundberg et al., 2010). Summarised as the WYLFIWYF-principle (What You Look For Is What You Find) (Lundberg et al., 2009), our hypothesis is that if different bodies with differing public functions investigate the same adverse event, there is a possibility (or risk) that the different investigatory bodies explore, analyse and construct causal factors in different ways and further, that it would make them draw different conclusions and suggest different targets of intervention.

The field of Safety Science has since the 1930s developed several schools of thought in the construction of accident causation. The global healthcare safety community seems to owe much to Heinrich's theory of industrial accidents as linear chains of events, triggered by a root cause being either mechanical or (most often) human, and with a direct relationship between major accident

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consequences and minor accident consequences (Heinrich, 1931). Based in Heinrich's theorems of accident causation, measures such as incident investigations and searches for 'the root cause', become meaningful activities to safety enhancement efforts. It was much later that Turner introduced the idea that accident causation needs to be constructed in terms of organisational learning and information-sharing deficiencies over long time periods (Turner, 1978). This notion of how organisational learning and culture are at heart of accident causation was further developed by Vaughan (1996) and Snook (2000). Additional theories, introducing the notion of complexity, include Perrow's 'pessimistic' account of how tightly coupled and complex systems will always hold a catastrophic potential (Perrow, 1984), and the more 'optimistic' Rasmussian school constructing accidents in terms of dynamics and hierarchies (e.g. Rasmussen and Lind, 1981; Rasmussen, 1997; Rasmussen and Svedung, 2000). It is followers of the Rasmussian school of Safety Science who have introduced the notion of resilience, studying how people and organisations sustain operations by adapting to the various stresses and threats that their complex environments (often healthcare) face (Bergström et al., 2015; Wears et al., 2015; Hollnagel et al., 2013; Nemeth, 2007; Woods, 2005).

Given the broadness of perspectives on accident causation found in the literature, we are in this study interested in whether three different Swedish public investigatory bodies, with different purposes of analysis, conduct their analyses of the same adverse healthcare event in different ways. The research question is how a Swedish healthcare provider organisation (healthcare provider), its regulatory authority at the time, SoS, as well as the Swedish Accident Investigation Authority (SHK), respectively constructs and understands the causal factors leading up to the same adverse healthcare event. This specific adverse event is, to our knowledge and to this date, the only adverse event in Swedish healthcare that has been investigated by three different investigatory bodies at approximately the same time. Trusting the principle of epistemological pluralism (March et al., 1991; Healy, 2003), we believe that three different perspectives of the same adverse event could contribute to a systemic explanation and understanding of not only the system behaviour, but also of meaningful system interventions. In the following sections we choose, for simplicity reasons, to use the expression incident, as equivalent to accident, with the same sense and meaning as used in our previous studies.

1.1. Background

1.1.1. The adverse event

A severely ill patient with cardiac valve disease was admitted to the Department of Thoracic Surgery at a Swedish university hospital. The patient was scheduled for surgery to receive a mechanical valve-prosthesis. During the valve-replacement procedure on 12th of October 2010, an external pacemaker was placed to be able to stimulate the heart postoperatively, if necessary. After surgery, the patient was cared for in the Thoracic Intensive Care Unit (TICU). On the first post-operative day, the patient had an episode with grave cardiac arrhythmia and underwent successful cardiopulmonary resuscitation, otherwise the condition of the patient improved as expected. The stay in the TICU lasted in total four days, and plans were made to transfer the patient to a regular ward on the 17th of October.

In the evening of the 16th, a shortage of beds was upcoming in the TICU. A decision was made by the doctors on call on the TICU and the Cardiology Intensive Care Unit (CICU) to transfer the patient to the CICU as a so-called satellite patient. This meant that care was given by staff at the CICU, but the patient was formally under medical supervision by the TICU. On arrival at the CICU, monitoring device for detection of arrhythmia was connected to the patient.

At a routine check by a nurse during the night shift the patient was found lifeless in bed. Resuscitation was attempted without any result, and the patient was declared dead. An autopsy was performed a couple of days later.

1.1.2. The incident reporting system

The Swedish healthcare system has since 1937 used a legislated model for external incident investigation of severe adverse events by a regulatory authority (The Social Welfare Board, 1940). The supporting foundation of this law states that if an adverse event has resulted, or could have resulted, in a serious incident, this should be reported to the regulatory authority for an external incident investigation. This model with a healthcare provider reporting incidents to a supervising regulatory authority has since then stayed virtually intact even though certain modifications, including name changes, have been made over the years. The regulatory authority has in recent years issued specific regulations governing the responsibilities of the healthcare provider; for example using an incident reporting system and carrying out internal incident investigations. In 2011 a legislative change pinpointed the healthcare providers' specific responsibility for patient safety *improvement* within their respective organisations. These regulations state that the regulatory authority "…ensures that reported adverse events have been investigated to a necessary extent, and that appropriate actions have been taken by the healthcare provider to reach a high level of patient safety" (SFS 2010:659). A new regulatory authority, IVO, was established in June 2013 (Prop. 2012/13:20) and commissioned to take over the supervision of the healthcare system from SoS. Both of these authorities act under the Ministry of Health and Social Affairs.

In general, the chief medical officer of a healthcare provider determines when and what to report to the regulatory authority regarding adverse events from the incident reporting system. A commissioning body within the healthcare provider is assigned to conduct an internal incident investigation. The commissioning body is most often the chief medical officer or the clinical head of department where the adverse event occurred. An analysis team is set up to perform the investigation and thereafter presents a report with recommendations on actions to the commissioning body. The external incident investigation by the authority is preceded by the internal incident investigation. In the external incident investigation the regulatory authority presents a decision to the healthcare provider addressing the fulfilment (or not) of their legislated role as previously stated.

SHK is an independent governmental authority under the Ministry of Justice that investigates all types of serious civil or military accidents and incidents with the aim of improving safety, regardless of whether they occur on land, at sea or in the air. Examples of areas where SHK carries out investigations include civil aviation, civil maritime transport, rail and road transports, as well as fires, building construction failures, mining, environmental pollution, nuclear power and medical technology. In some situations an investigation is mandatory while in others it is up to the authority to decide on the basis of the anticipated safety gains of an investigation. SHK is by the Swedish Accident Investigation Act limited to only target its recommendations to regulatory authorities. The adverse event studied here is, to our knowledge, the only incident in the medical field ever investigated by SHK.

1.1.3. The three investigatory bodies

(i) The healthcare provider organisation (healthcare provider)

The chief medical officer of the healthcare provider assigned a commissioning body, the clinical head of department were the